---------- CEN 4072/6070 Software Testing & Verification ----------

Exam 1 -- Spring 2013 – Solution Notes

1. e

2. 20:X = (30-20=10):(10+20=30) => X= **60** is the number of errors seeded.

3. a. v, b. vi, c. v, d. iv, e. i, f. v

4. a. is, b. is not, c. is not, d. is, e. is, f. is not

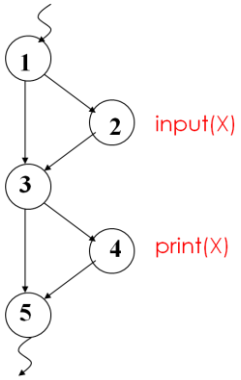
5. # of test cases required for ***strong*** *equivalence class testing:* **18**
   # of test cases required for ***weak*** *equivalence class testing:* **3**

6. a, b, d, e, g

7. a. true, b. false, c. true, d. true, e. false

8. a. false, b. true, c. true, d. false, e. true

9.



For the program depicted, assume that the **only** use of X occurs at node 4. Consider two test cases executing paths <1,2,3,5> and <1,3,4,5>. The two cases obviously provide Branch Coverage (every branch/edge is traversed once) but does not provide All-Defs Coverage since neither path includes both the definition of X at node 2 and the (only) use of X at node 4. Therefore Branch Coverage does NOT subsume All-Defs Coverage

10. d.

11. G, K, A, C, F, B

12. a. ii
    b. i, iii, v
    c. i. false, ii. true, iii. false, iv. false, v. false

13. a. (3 pts.) (2X2X3=) **12**
    b. (12 pts.)

	TEST CASE TEMPLATES					
CAUSES	**1**	**2**	**3**	**4**	**5**	**6**
(6)	**T**	**T**	**F**	**F**	**T**	**T**
(7)	**T**	**F**	**T**	**F**	**T**	**T**
(8)	**T**	**T**	**T**	**T**	**F**	**F**
(9)	**T**	**T**	**T**	**T**	**T**	**F**
EFFECT						
(26)	**T**	**T**	**T**	**T**	**T**	**T**

    c. (3 pts.) 1,4,6 (from part b)

14. I, J, G, L, X, H, T, W, N, B, M, O

15. a. (5 pts.) (1,2) (1,4) (1,<1,2>) (1,<1,4>) (2,3) (2,4)
    b. (8 pts.) (1,3) (1,4) (1,<2,3>) (1,<2,4>) (3,3) (3,4) (3,<3,3>) (3,<3,4>)
    c. (3 pts.) <2,4> <2,3,4> <2,3,3,4>
    d. (3 pts.) i. 1, ii. 3, iii. 4
    e. (5 pts.) $X<0$ & $Y>0$ & $Y+X>0$ & $Y+2X>0$ & $Y+3X\leq 0$
    f. (1 pt.) X=-2, Y=5 (or any other X,Y values satisfying correct path condition)